Analysis of the Relationship between the Amount of Cash Held by Companies and Future Cumulative Abnormal Returns

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Abstract

Stock companies' decision making about financial leverage is one of the most important decisions that will be taken by corporate executives. Financial decisions not only affect companies' future performance, but also can affect countries' macroeconomic performance. This study aimed to investigate the relationship between the amount of cash held by firms and their subsequent cumulative abnormal returns. In order to do this survey, 120 companies listed in Tehran Stock Exchange during 2004 to 2010 were analyzed. Evidence based on panel data analysis show that, future performance of the company whose representative is upcoming cumulative abnormal returns, shows a reduction of future stock returns due to surplus cash which indicates that the market is not able to completely predict the effects of excessive cash in current market.

Keywords: cash, future cumulative abnormal returns, market efficiency

Introduction

The amount of cash held by companies is the subject of growing attention of many researches. It is reasonable to expect that strategic decisions about how to manage liquidity in the process of companies' financial management are significantly important to investors. In order to avoid restrictions facing foreign financing, including transaction costs and other financial restrictions, managers prefer to use internal financing. Consequently, they try to maintain more Cash assets. But, sometimes excessive maintenance of liquidity and avoidance of using them in company's operations will result in poor performance of the company. In fact, it is stated that according to the theory of exchange, managers in order to balance cash maintenance costs and its benefits, hold the level of cash which is called the optimal level (Defond and Park, 1997).

Today, stock market performance in developed countries is used as an indicator to evaluate the economic, financial and trade policies and changes in these countries. The amount of cash needed for companies has always been taken into account by financial research. In theoretical literature of companies' cash, it is stated that companies based on transactional motives, precautionary and notes transactions attempt to preserve cash. Decision making of stock exchange companies associated with financial leverage is one of the most important decisions taken by corporate executives. Financial decisions not only affect the company's future performance, but can also affect the country's macroeconomic performance. It discusses that financial accelerators are directly related to the role and impact of financial companies' conditions on financial shocks. Since productivity is considered as an important criterion for evaluating companies, its role can be important to the active firms in the financial markets. In this way, according to this theory, the ratio of the excessive debt to the optimal debt can be calculated and this approach determines the optimality of leverage amount. Therefore, this theory indicates the relationship between debt and assets (Coricelli et al, 2010). Based on this approach, the impact of excessive or lack of leverages on companies' performance is evaluated.

Background of the study

Among the most important monetary resources and capitals in the society is macro and micro liquidity in the economy of each society or country. Undoubtedly, absorption and guidance of this fluidity requires appropriate analysis of investment opportunities in different monetary markets of society. Recognizing appropriate investment opportunities in every stock exchange market needs detailed analysis of companies' financial lists and correct prediction of future profit and return in each share. Therefore, analysis and forecast of effective factors on price and return of companies' share have always been taken into account by investors, agents and other beneficiaries in stock market (Ashri et al, 1994).

Mikkelson and Partch (2003) found out that companies which continuously preserve high amount of cash show better performance. This indicates that preserving excessive cash does not negatively affect company's performance and even fundamental performance improves by increasingthe level of cash. Conversely, Dittmar, and Mahart-Smith (2007) and Harford et al. (2008) showed that future return of properties reduces with cash increase. Dittmar, and Mahart also show that some variables of corporate rule lowers this impact. Though, none of these articles examined the relation between cash and future performance of company considering insufficient cash. The main problem in this research is the analysis of how the relation between excessive and insufficient cash is related to company's fundamental performance and investors' perception about it. The reason for cash deviation to two sections of surplus and insufficient is that their impact may be completely different.

Methodology

The method applied in this research is descriptive regression and its data were based on financial information of companies admitted in Tehran stock exchange. This research methodology is post-hoc, i.e. research is done based on old information. Also, with regard to the objective, it is considered as developmental and regarding data collection and type of descriptive-regression data, it is based on panel data analysis. Statistical analysis was done using computer software. In order to test research hypotheses, regression analysis and correlation was used. Significance of the models is also examined by using determination coefficient, correlation coefficient and t-statistics. Correlation analysis or consistency includes all methods by which it tries to determine or explore the relation between different variables using regression model and correlation relationship. The purpose of correlation analysis method is to study the consistency of one or more variables with changes of other variables.

Data analysis method

Data around the theoretical basis of the research were collected from Persian and Latin books and articles and necessary information for hypotheses testing was obtained from audited financial lists of companies under study as well as compact discs of stock exchange including Tadbir Pardaz and Rahavard Novin and through www.rdis.ir. Furthermore, Excel and E-views 7 software were used to calculate and do statistical analysis.

Research hypotheses

First hypothesis: preserved cash properties are conversely and significantly related to future abnormal cumulative return more than appropriate optimal level.

Second hypothesis: preserved cash properties are conversely and significantly related to future abnormal cumulative return less than appropriate optimal level.

Literature review

Jones (2011) in his article examined the impact of profit quality on the level of cash preserve in English companies. By using data of 200 companies during 2000 to 2010 concluded that the profit quality is negatively and significantly related to cash or cash equivalent. Results also show that variables of growth opportunity and cash flow are negatively related to cash remaining.

Elita (2011), in his article, examined the cash flow and performance of New York stock exchange (NYSE). He concluded that the amount of cash preserved has a positive and significant relation with company's performance and the more the company keeps cash remaining, the more these company's returns and profit will be in the following periods.

Oler and Picconi (2007), by analyzing data of 17 fiscal years from 1989 to 2005, examined the impact of insufficient cash on future performance. They argue that we can predict future abnormal cumulative return and operational performance based on company's deviation from estimated optimal level of cash. Their research findings indicated that cash flow levels are lower than strong optimal correlation level with future operational performance. Future operational performance reduces when companies maintain higher amounts of cash because of high probability of inappropriate investment by these companies. Despite companies with excessive cash encounter weaker future performance, no abnormal negative return was seen unless they preserve too much cash. With regard to these findings, investors in general understood the concept of the excessive cash level impact appropriatelybut they have not completely and properly understood the concept of insufficient cash resources. Also, it does not seem that investors consider concept of too high excessive cash flow. In another section, findings of this research examined the impact of companies' juvenility and cash level of such companies on their return; young companies are not inclined to have negative future abnormal cumulative return, when companies preserve excessive cash, future reduction in stock price decreases.

Furthermore, Foley et al., (2007) examined the reasons for preserving high amounts of cash by companies. Their research results show that, American firms report high amounts of cash in their balance sheets. They believe the reason for preserving such high amounts of liquidity in multi-national companies is related to tax costs of returning foreign revenue to the country. Also, findings of this research show that companies that face higher tax costs of returning revenue to the country, keep more cash. They keep these liquidity abroad so as not to being forced to pay high taxes of foreign incomes. Moreover, companies with more financial limitations and those who work with broader technologies show more sensitivity to the relation between cash properties and tax costs of returning them to the country.

In another study, Opler et al. (1999) in their research examined the factors effective on cash properties of companies during 1971 and 1994. Methods used in this research are regression method of Fama and Makbeth model, cross-sectional regressions and fixed effects.

Findings of this research indicate that there is an exchange relation between cash maintenance costs and its benefits. Evidence of this research show that small firms and firms that have more growth opportunities with higher risks keep more amounts of cash. Findings of this research show that companies have one level of target cash. The ratio of cash average was calculated up to 17%; though medium level of cash equals to 6.5%.

Johnson (1986) in another study examined the investors' perspective through return analysis of investment of portfolios created according to transaction strategies which are based on cash and prediction of future cash. Analysis of transaction strategies used in his research is done in such a way that portfolios of companies with high and low liquidity are compared. The results show that investors reward firms who report lower cash in their balance sheets which contradicts maintaining more cash in facing financial limits. Findings of this research show that managers do not always use

cash obtained from operation properly, especially in case of company's weak performance. On the other hand, if investors in choosing stock have used fundamental analysis of company's liquidity like ratio analysis, they should be able to gain additional return in margins. Of course, in this research, the ratio of price to stock income is used for the purpose of analyzing performance,.

Results of estimating optimal cash model

The first model presented in this research is the optimal cash model which is based on the hypothesis that companies with regard to their specific features such as sale growth, stock profit payment and amount of cash flow require maintenance of a particular level of cash which is called optimal cash. It is expected that any kind of negative or positive deviation from estimated amount affects negatively future performance and return. Real cash deviations from this optimal level are used in future models as independent variable and are used to test hypotheses.

At first, results of Hausman and F test confirms estimation of model through impact method, i.e. the calculated F is greater that F in the table, so the H_0 based on equality of y-intercepts is not accepted. It means that OSL model cannot be used to estimate the pattern. The calculated Chi-Square statistics also indicates failure to confirm random effect method.

According to what was said, significance of the model resulted from GLS method was analyzed using the fix effects method (weighing cross-sectional observation) for 120 companies in the sample for the period 2004 to 2010.

Table 1: Results of estimating optimal cash model

Result	Sig.	Estimated coefficient	Abbreviation	Independent variables
؟	0.0000	0.029733	MTB	Market value/official value
+	0.6147	0.014871	Sales Growth	Growth in sale
-	0.0000	0.064807	Size	Company size
+	0.0000	0.120766	CFO	Cash Flow operation
+	0.0000	0.088797	NWC	Net working capital
+	0.0000	0.076146	Cap-Exp	Capital cost
+	0.0000	0.148713	Leverage	Leverage
+	0.3245	0.014413	DivDummy	Dividends pay
+	0.0000	0.025487	Firm Age	Firm age
			79.25%	Determination coefficient
13.20		F	78.24%	Reduced Determination coefficient
0.000		Sig.	1.99	Durbin-Watsun

The balanced determination coefficient model equals to 78%, which is more than what has been obtained in previous studies because the balanced determination coefficient of Oupler et al. (1999) is almost 23%, also the balanced determination coefficient of Drek and Pckni (2009) in their cash model which is represented in table 2 was estimated as 49%. Watson-Durbin statistic is 1.99 which indicates lack of self-correlation in the part of disruption in the estimated model. Probability of F statistics represented below indicates the significance of the model at 99% confidence level. In all pattern variables except sales growth, stock interest is significant at 99% confidence. Of course, coefficients of two insignificant variables can be ignored. Like findings of Opler et al., the

coefficient calculated for market value to the office value indicates amount of market value to office value and positively affect optimal cash amount which contradicts research results of Drek and Pikni (2009). Probably, it is due to more demand of companies faced with more growth opportunities to cash. As it was expected, the company's size negatively affects the optimal cash level of company because such company's access to capital is easier and do not need maintaining too much cash. The pure operational cash flow positively affects preserved cash level. The reason for this impact is high cash flow and entry of too much cash to these companies. Unexpectedly, pure capital flow positively affects amount of required cash. The reason may be high cash flow in companies having more pure capital that includes transaction motivation of cash maintenance. Also, results show that companies with regard to their need to cash (whose representative is capital costs) and reduction of external finance (whose representative is leverage amount) maintain more cash. Unexpectedly, the company's lifetimecan influence preserved cash positively and significantly, too. Most firms living longer, report more debt in their balance sheet. Thus, the reason for this positive impact is problems facing these companies in more financing outside of Iran.

Results of excessive and insufficient cash model effect on future abnormal cumulative return

Future returns that cumulative abnormal return is considered as its representative is a criterion which is used to evaluate investors' prediction power. In fact, unless the level of cash deviation impact on performance is not predicted in the current year, this impact appears in future and simultaneous returns by performance influence (Kong et al. 2008). In order to test the second hypothesis, we examine whether market shows the cash changes regarding optimal reaction level. Research hypotheses are as follows:

- Preserved cash properties is significantly and conversely related to future abnormal cumulative return more than level of appropriate optimal calculated level.

- Preserved cash properties is significantly and conversely related to future abnormal cumulative return less than appropriate optimal calculated level.

Future return in this research is calculated in form of abnormal cumulative return from the beginning of fourth month after the end of fiscal year and till the end of next 12 months. In order to analyze the impact of independent variables, the market value was added to office value and the variables related to cash flows were added to the model. Results of F-test and Huasman test confirms the use of fix impact method.

Table 2: The results of future cumulative abnormal returns

Result	Sig.	Estimated coefficient	Abbreviation	Independent variables
-	-0.0009	-0.82551	EC	Excess Cash
-	-0.6679	-0.033357	IC	Insufficient Cash
؟	0.0001	0.019699	YD	Young Dummy
؟	0.0481	0.196707	YEC	Young*Excess Cash
؟	-0.8783	-0.024017	YIC	Young* Insufficient Cash
+	0.6191	0.010286	CFO	Cash Flow Operation
+	0.0078	0.02754	CFI	Cash Flow Income
+	0.0008	0.023857	CFF	Cash Flow Financing
4.21	F		43.54%	Determination coefficient
0.000000	Probability		40.18%	Reduced Determination coefficient

F-statistic significance level equals to 0.000 which indicates total validity of the model at the 99% reliability. Balanced determination coefficient of this model regarding available variables is almost 40%. This shows that 40% of changes of future cumulative abnormal returns can be explained by this model. The calculated determination coefficient in Oler and Pikni research (2006) equals to 5.2% and also this coefficient for Falknder and Wang model (2006) equals to 20%. All variables except insufficient cash flow, pure operational cash flow and insufficient cash are significant at 95% level of confidence in youth companies. Excessive cash coefficient equals to -0.08. It is interpreted as per one percent change in excessive cash, return reduces to 0.07 percent which shows market does not completely understand excessive cash during current year.

Youth companies' coefficient that preserve more cash equals to +0.19 which means 1% increase in this variable because 0.19% increase in dependent variable; most probably its reason is that such companies require preserving more cash for less access to capital market and facing some financial limitations. Pure variable coefficient of operational cash flows is not significant because of its reflection in current return, though this coefficient is also insignificant. Other cash flows at confidence level of 99% are positive and significant expectation.

Results presented in table 2 confirms first hypothesis and indicates that during the same year, market does not completely adjust to company's deviation from optimal cash level and also these result show that companies which can preserve large and or small amounts of cash, can increase their stock value by balancing their cash towards optimization.

Conclusion

The first hypothesis based on reverse effect of excessive cash on the future return was confirmed, but no significant relation was seen between insufficient cash and future return, consequently, the second hypothesis was not confirmed; market participants react to their incomprehension of its impact on performance in future year and in current year and the level of incomprehension along with its functional effects in future years react to cash deviations.

Results show that companies that preserve too much and or too little cash can increase their stock value by balancing their cash toward optimization. Also, preserving excessive cash increase abnormal cumulative return of youth companies which show this company's more need to cash.

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